2.4GHZ DIGITAL WIRELESS INTERCOM SYSTEMS

HME DX Series

HME DX100

HME DX121

HME DX300ES

HME DX210

Highly Functional and Versatile

For Reliable Mobile Communications

Clear-Com®
AN HME COMPANY

PRODUCT FAMILY OVERVIEW

All HME DX Series wireless intercom systems feature Spectrum-Friendly™ technology for interference-free operation in the increasingly crowded 2.4GHz frequency band. This technology enables broadcast and theatrical production crews to avoid emerging frequency conflicts by designating the 2.4GHz operating frequency range: low- (2.4019- 2.4399GHz), high- (2.4434-2.4814GHz), or full-band.

While generally not a problem when separated, multiple applications and multiple users of the same applications in close proximity can create additional risk for trouble-free operation. The Spectrum-Friendly technology further ensures that HME products do not add interference to the spectrum for other essential wireless services in the vicinity, such as DMX-controlled lighting.

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HME is the proud recipient of the Technology and Engineering Emmy Award for the **Development of Wireless Intercom.**

NATIONAL ACADEMY OF TELEVISION ARTS & SCIENCES

Simple and Compact

The HME DX100 system enables two-way communications in a compact, portable base station for up to 15 simultaneous wireless users. Hands-free mode allows maximum flexibility and a secure channel ensures that private conversations stay confidential.

The portable, compact design makes the DX100 system ideal for mobile field applications.

Up to 15 COMMUNICATOR®s can be assigned to each base station, four of which can be used in hands-free, full-duplex mode.

Digital Frequency-Hopping Spread Spectrum (FHSS) with encryption secures communication to prevent eavesdropping.

Remotely "unlatch" COMMUNICATOR transmitters from the convenience of the base station to help stop a COMMUNICATOR that has been unintentionally left transmitting. This is very helpful if a remote user removes his COMMUNICATOR and forgets to turn it off.

Triple diversity — space, time and frequency diversity provide redundant communication to make it the most dependable system available.

Flexible, battery-powered operation allows the base to be powered in four different ways:

- Six 1.5V "AA" batteries
- Optional rechargeable BAT850 battery
- 12 VDC automotive adapter
- 100-240 VAC power adapter (provided)

Power outage backup feature enables uninterrupted communication in the event of power loss.

Powerful and Versatile

The HME DX121 is a versatile, cost-effective system for adding wireless beltpacks to wired intercom systems.

Up to 4 COMMUNICATOR®s can be assigned to each base station, one of which can be used in hands-free, full-duplex mode.

2.4GHz Digital Frequency-Hopping Spread Spectrum (FHSS) 64 bit encryption ensures confidential communication. Approved for worldwide use.

Assignable relay closure provides advanced functionality when used with matrix intercoms or radio based communication systems.

Built-in one-port battery charger charges a remote beltpack or all-in-one headset battery.

Connects to headset jack of beltpacks and intercom panels.

Connect BS121 to headset jack on beltpack or panel to add wireless COMMUNICATOR® to your system.

Compatible COMMUNICATOR® models for HME DX100 and HME DX121 (Details on pages 7.)

Optimum Performance and Highly Intuitive

The HME DX210 offers the perfect blend in performance, expanded connections with wired intercoms and ease of use for reliable intercommunications. Operating in the 2.4GHz band, the DX210 delivers exceptional sound clarity and enables interference-free communications for highly demanding productions.

An advanced 2.4GHz, digital communications system ideal for theatre, remote and studio broadcast productions, live performances, arena and stadium events.

Up to 15 COMMUNICATOR®s can be assigned to each base station. In the two-channel mode, any three COMMUNICATORs can be speaking simultaneously and in the selectable single-channel mode, any four COMMUNICATORs can be speaking simultaneously.

Expandable system enables up to four synchronized co-located base stations to be used together for a total of 60 COMMUNICATORs with up to 16 that are hands-free, full-duplex in single channel mode.

Wired Intercom Input/Output interfaces make DX210 compatible with existing two-wire partyline or four-wire matrix systems provided by Clear-Com or RTS.

Wireless ISO Talk-around allows all wireless users on the same base station to talk with each other, isolated from either two- or four-wire intercom channel. ISO function can be restricted to specific users.

Digital Auto "Nulling" (Front Panel Access) provides the deepest hybrid balancing in the industry and is flat across the entire speech bandwidth. The DX210 is equipped with an auto "nulling circuit" to easily null two-wire connections and eliminate echo automatically.

The DX210 has two separate two-wire/four-wire connections, assignable AUX IN for program input plus AUX OUT that can be used to direct wireless ISO to Stage Announce (SA).

Triple diversity — space, time and frequency — operation for extreme multi-path situation provides redundant communication to make it the most dependable system available. The strongest signal is selected from two different antennas, transmitted and received at two different times, on two different frequencies.

HME DX210 SYSTEM

Spectrum Friendly™ technology allows users to select the 2.4 GHz operating frequency range – low-band, high-band or full-band – in order to avoid frequency conflicts.

The vertical and horizontal diversity antenna system is specially designed to prevent dropouts and provides the strongest audio signal possible.

Digital 64 bits of encryption for secure communications and Frequency Hopping Spread Spectrum (FHSS) technology prevents unauthorized personnel from hearing or interrupting your communication.

Remotely "unlatch" COMMUNICATORs from transmitting at the base to stop a rogue COMMUNICATOR that's been left transmitting without having to locate the beltpack.

Relay (GPIO) actuation with ISO function from either base station or any one of the appropriately configured COMMUNICATORs.

Selective headset connector allows the base station operator direct access to the IC channel, AUX IN/OUT, as well as COMMUNICATORs.

XLR-3F/1/4" Phone Combo Jack AUX IN connector allows quick change of audio source connections. Level Adjustable Balanced AUX input jack expects either ¼" TRS or 3-PIN XLR.

Backward compatible with previous HME DX200 COMMUNICATORs, (BP200) beltpacks are automatically assigned to channel 1 audio and work seamlessly with the DX210.

Two-wire loop-through connectors allow for connection to multiple external audio devices.

Feedback protection for un-terminated two-wire channels automatically eliminates feedback when connecting DX210 base station to two-wire systems.

Compatible COMMUNICATOR® models for HME DX210

(Details on page 7.)

BP200 Beltpack

WH200 All-in-One Wireless Headset

WH210 All-in-One Wireless Headset

BP210 Beltpack

Comprehensive and High Capacity

The flexible HME DX300ES offers a two-channel mobile intercom system that is easy to set up and use, as well as expandable to accommodate larger production crews. Flexible power options, compact size, light weight, and triple diversity design make the DX300ES the ideal solution for live events and broadcast productions where portability, capability and user capacity are critical.

Up to 15 COMMUNICATOR®s can be assigned to each base station. In the two-channel mode, any three COMMUNICATORs can be speaking simultaneously and in the selectable single-channel mode, any four COMMUNICATORs can be speaking simultaneously.

Fast, easy setup for strategic relocation — Highly portable and very quick to set up and operate.

Secure, 64-bit encryption and digital Frequency-Hopping Spread Spectrum (FHSS) prevent interruption from other systems.

Mix and match traditional headsets and beltpacks with wireless all-in-one COMMUNICATOR®s. Both units are very lightweight and comfortable to wear.

Expandable, hands-free operation supports five production crew members in two-way conversation — two connected to the MB300ES base station and three using wireless COMMUNICATORs. The system easily expands to 20 users by adding up to three additional MB300ES base stations. Multi-channel capability permits production crew members to talk together on one channel or to split up on two separate channels. Convenient all call button allows transmit on both channels.

COMMUNICATORs can be used even while their **Lithium-Ion batteries are charging.** When the low battery message is heard, simply replacing the battery in the COMMUNICATOR with a fully charged battery keeps it up-and-running for up to 20 more hours. Batteries charge in less than three hours in the DX300ES four-port battery charger.

Triple diversity — space, time and frequency diversity — provides redundant communication to make it the most dependable system available.

Flexible power options enable the MB300ES Base Station to operate on 100-240 VAC, 12-14 VDC, 1.5V "AA" batteries or an optional rechargeable BAT850 battery.

Portable size and weight — Designed to travel where needed, the MB300ES Base Station weighs less than three pounds with battery, and measures only 8" x 8" x 3.5".

Auxiliary Input and Output ten-pin terminal strip connector for easy connection to four-wire intercom systems. External interface required to connect into two-wire systems.

Dedicated channel relays — Each channel has a dedicated relay. Wireless users can activate either one or both simultaneously.

Compatible COMMUNICATOR®s models for HME DX300ES

BP300 Beltpack

WH300 All-in-One Wireless Headset

Note: The keypad on a HME DX300ES COMMUNICATOR® is marked X, O and All. X and O are channels. The All key is used to talk on both channels simultaneously. The HME DX300ES COMMUNICATOR®s only work with the HME DX300ES Base Station and are not compatible with the HME DX100, DX121, DX200, or DX210 Base Stations.

Super-compact and Durable

The DX Series Wireless Intercom Systems are supported by two types of COMMUNICATOR®s: Beltpacks and All-in-One Wireless Headsets. The COMMUNICATORs can be mixed and matched for use with most DX Series systems.

For use with the HME DX100, HME DX121, and HME DX210

HME DX Series beltpacks and wireless headsets are the lightest, easiest-to-use and most durable COMMUNICATORs in the industry.

For use with the HME DX210

FEATURE HIGHLIGHTS

- Two intercom buttons (IC1/IC2) with ISO
- Beltpack mic gain and side tone control
- Selectable PTT or latching button modes
- ISO restrict mode
- COMMUNICATOR "listen only" mode
- Wireless headset "blackout" mode (WH200 & WH210 only)
- Internal antennas
- Lithium-Ion rechargeable batteries with up to 20 hours of operation
- User voice prompts

HME DX BELTPACKS AND WIRELESS HEADSETS

Internal antennas are housed inside the COMMUNICATORs for extra durability.

Rechargeable Lithium-Ion batteries provide up to 20 hours of COMMUNICATOR operation with each charge. Batteries charge in less than three hours in the four-port battery charger.

Voice prompts inform users of status changes through the headset, such as "change battery" or "out of range."

Electronic mic gain and sidetone adjustments allow for easy, tool-free settings. Sidetone adjustment is not available on the WH200 or WH300.

Selectable momentary or latching button mode allows better management of system resources.

COMMUNICATOR COMPATIBILITY CHART

MODELS	BP200	BP210	BP300	WH200	WH210	WH300	WS200
DX100	X	X		X	X		X
DX121	X	X		X	X		X
DX210	X	X		X	X		X
DX300ES			X			X	

ACCESSORIES

HS15 Headset

Ultra comfortable, single-ear, lightweight headset. Electret noise-canceling microphone mounted on a flexible boom which rotates for left or right side use. (Order: CZ11450)

Compatible with	100	121	210	300ES

HS15D Headset

Ultra comfortable, dual-ear, lightweight headset. Electret noise-canceling microphone mounted on a flexible boom which rotates for left or right side use. (Order: CZ11451)

Compatible with	100	121	210	300ES

HS16 Headset

Super lightweight, single-ear headset with noise-canceling electret microphone is worn on either ear. Flexible microphone boom ensures optimal sound clarity. Adjustable stainless steel headband provides stable, comfortable fit while ensuring secure positioning of microphone boom. (Order: CZ11452)

Compatible with	100	121	210	300ES

HS4-3 Earpiece and Lapel Mic

This earpiece and multidirectional electret lapel microphone combo is perfect for more discreet applications where clear, reliable communication is critical, but the earpiece and mic need to be less conspicuous. (Order: CZ11453)

Compatible with	100	121	210	300ES

Foam Ear Pads

Used on the HS16 Headset. (Order: 306G103)

Used on HS15 and HS15D headsets. (Order: 202G153)

Compatible with	100	121	210	300ES

MD-XLR Headset Adapter

These adapters enable headsets with dynamic mics and XLR connectors to interface with all the DX Series headset jacks. An active built-in circuit provides impedance matching and DC isolation. XLR adapters interface with 4P male, 4P female or 5P male headset connectors. (Order: 4P male: G27245-1, 4P female: G27256-1, 5P male: G27267-1)

Compatible with	100	121	210	300ES

Headset Extension Cable

Six foot headset extension cable for all mini-DIN DX Series headset connectors. (Order: 115G394)

Compatible with	100	121	200	210	300ES

Headset Interface Adapter

The HSI6000 allows a standard 2.5mm cell phone headset to be connected to the DX Series beltpacks. (Order: CZ11453)

Compatible with	100	121	210	300ES

SP10 Base Station Monitor Speaker

Compact eight Ohm speaker that is easily connected to a BS210 Base Station. (Order: G27942-1)

Compatible with	210

Base Antenna

4.7" reverse TNC base station antenna. 50 Ohm omnidirectional half-wave dipole. (Order: 101G048)

Compatible with	100	121	210	300ES

ACCESSORIES

Antenna Extension Cables

These 6-foot or 30-foot cables enhance the RF signal of DX bases installed in demanding applications. The 6-foot and 30-foot cables are ideal when antennas must be mounted remotely from the equipment rack. (Order: 6ft: G27009-1, 30ft: G26671-1)

Compatible with	100	121	210	300ES

Antenna Splitter

The two-way antenna splitter/combiner allows flexible spot coverage. (Order: 647G006)

Compatible with	100	121	210	300ES

Rack Mount Kit 1-RU Panel

Permits the base station antennas to be mounted on the front of the rack panel instead of the back of the base station. (Order: G28066-1)

Compatible with	200	210

BAT850 Rechargeable Battery

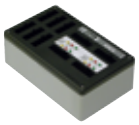
A more cost-effective alternative than using six 1.5V "AA" batteries, the 7.2V 2300 mAH Ni-MH battery provides hours of reliable, uninterrupted operation for MB Series Base Stations. (Order: G27021-1)

Compatible with	100	300ES

AC850A Battery Charger

This four-port unit charges BAT850 Ni-MH Battery for MB Series Base Stations and WS200 Wireless Speaker Stations. Charger comes with a 100/240 VAC power supply. (Order: CZ11484)

Compatible with	100	300ES



AC40A Battery Charger

Up to four BAT41 Batteries for BP210/300 Beltpacks and WH200/300 All-in-One Wireless Headsets can be charged simultaneously in less than three hours. Charger comes with a 100/240 VAC power supply. (Order: CZ11378)

Compatible with	100	121	210	300ES

BAT41 Rechargeable Battery

Lithium-Ion battery provides 20 hours of push-to-talk operation when used with DX Series beltpacks or All-in-One headsets. (Order: 104034)

Compatible with	100	121	210	300ES

12VDC Power Supply

115/230 VAC universal power supply and cord for all DX Series Base Stations, AC40A Battery Charger and WS200 Wireless Speaker Station. (Order: CZ11421)

	100	121	210	300ES

MB300ES Interconnect Cable

Seven foot cable with RJ45 connectors for linking up to four MB300ES Base Stations. (Order: 115G372)

Compatible with	300ES

Travel Case

Travel case for DX300 Systems includes foam insert cutouts. (Order: 176G018)

Compatible with	300ES

Beltpack Pouch

SantopreneTM rubber protective pouch with internal clip for BP210 and BP300 Beltpacks. (Order: 107G065)

Compatible with	100	121	210	300ES

TECHNICAL SPECIFICATIONS

SYSTEM SPECIFICATIONS				
	DX100	**DX121**	**DX210**	**DX300ES**
RF Frequency Range	All Band 2400-2483.5MHz Low Band 2401.9-2439.9MHz High Band 2443.4-2481.4MHz	All Band 2400-2483.5MHz Low Band 2401.9-2439.9MHz High Band 2443.4-2481.4MHz	All Band 2400-2483.5MHz Low Band 2401.9-2439.9MHz High Band 2443.4-2481.4MHz	All Band 2400-2483.5MHz Low Band 2401.9-2439.9MHz High Band 2443.4-2481.4MHz
Frequency Response	200Hz-3.5kHz	200Hz-3.5kHz	200Hz-3.5kHz	200Hz-3.5kHz
Distortion	<2%	<2%	<2%	<2%
RF Sensitivity	<-90dBm with 10-3 BER	<-90dBm with 10-3 BER	<-90dBm with 10-3 BER	<-90dBm with 10-3 BER
Temperature Range	-4 to 131°F (-20 to 55°C) Typ.	-4 to 131°F (-20 to 55°C) Typ.	-32 to 122°F (0 to 50°C) Typ.	-4 to 131°F (-20 to 55°C) Typ.
Transmit/Receive Type	Frequency-Hopping Spread Spectrum (FHSS)	Frequency-Hopping Spread Spectrum (FHSS)	Frequency-Hopping Spread Spectrum (FHSS)	Frequency-Hopping Spread Spectrum (FHSS)
Modulation Type	Gaussian Filtered FSK, TDMA	Gaussian Filtered FSK, TDMA	Gaussian Filtered FSK, TDMA	Gaussian Filtered FSK, TDMA
Encryption	64-bit	64-bit	64-bit	64-bit

COMMUNICATOR SPECIFICATIONS		
	BP200/BP210/BP300	**WH200/WH210/WH300**
Transmit Power	100mW Burst	100mW Burst
Antenna	Internal, Dual-Diversity	Internal
Mic Input	Electret	N/A
Headset Connector	Mini-DIN	N/A
Headset Output	160mW into 32Ω Capable of Driving 16 to 32Ω	160mW into 32Ω
Size	3.4" x 2.6" x 1.5" (8.64cm x 6.60cm x 3.81cm)	6.4" x 6.9" x 4.6" (16.19cm x 17.46cm x 11.75cm)
Weight	7.4oz (0.21kg) with Battery and Pouch	5.7oz (0.16kg) with Battery
Power Requirements	One 3.6V Lithium-Ion Rechargeable	One 3.6V Lithium-Ion Rechargeable
Battery Life	Hands-Free: Up to 14Hrs PTT: Up to 20Hrs	Hands-Free: Up to 14Hrs PTT: Up to 20Hrs
FCC Acceptance	Part 15 (No License Required)	Part 15 (No License Required)

TECHNICAL SPECIFICATIONS

BASE STATION SPECIFICATIONS				
	MB100	**BS121**	**BS210**	**MB300ES**
Transmit Power	100mW Burst	100mW Burst	100mW Burst	100mW Burst
TX & RX Antenna Dipole	½-Wave, Dual-Diversity Dipole	½-Wave, Dual-Diversity Dipole	½ -Wave, Dual-Diversity Dipole	½ -Wave, Dual-Diversity Dipole
4-Wire I/O	N/A	Terminal Strip Connector, 600Ω Balanced, Level Adjustable	RJ-45, 600Ω Balanced, Level Adjustable, Simultaneous Operation with 2-Wire (x2)	Terminal Strip Connector, 600Ω Balanced, Level Adjustable
2-Wire I/O	N/A	N/A	XLR-3F & 3M, Externally-Switchable RTS or Clear-Com Mode, 200Ω, Level Adjustable, Null Adjustable	N/A
Headset I/O	DIN	200Ω Balanced, Level Adjustable	DIN	DIN
Relay I/O	N/A	5-Pin Terminal Strip Connector, NC, COM, NO, I.C.SEL, GND	5-Pin Terminal Strip Connector, NC, COM, NO, No Connection, GND	8-Pin Terminal Strip Connector, NC, COM, NO, GND (x2) (ES only)
Auxiliary Input	N/A	N/A	XLR-3F/1/4" (6.35mm) Combo Jack, 600Ω Balanced, Level Adjustable	Terminal Strip Connector, 24KΩ Balanced, Level Adjustable
Auxiliary Output	N/A	N/A	XLR-3M, 600Ω Balanced, Level Adjustable	Terminal Strip Connector, 600Ω Balanced, Level Adjustable
Headset Mic Input	Electret	N/A	Electret	Electret (x2)
Headset Connector	N/A	N/A	4-pin Mini-DIN	Mini-DIN (x2)
Headset Output	N/A	N/A	250mW into 32Ω	200mW into 32Ω
Size	10.2" x 6.45" x 3.33" (25.91cm x 16.38cm x 8.46cm)	1.62" x 5.50" x 7.88" (4.1cm x 14cm x 20cm)	19" x 1.72" x 11.6" (1-RU) (48.26cm x 4.37cm x 28.10cm)	8" x 8" x 3.5" (20.32cm x 20.32cm x 8.89cm)
Weight	2.42lb (1.1kg)	1.2lb (0.59kg) with Battery	9.0lbs (4.1kg)	2.8lb. (1.3kg)
Power Requirements	100-240VAC, 50-60Hz or 12-14VDC or Six "AA" Cells (Ni-MH Optional)	100-240VAC, 50-60Hz or 12-14VDC	100-240VAC, 50-60Hz or 12-14VDC	100-240VAC, 50-60Hz or 12-14VDC or Six "AA" Cells (Ni-MH Optional)
Battery Life	Up to 8 Hrs (with Lithium AA)	N/A	N/A	Up to 4 Hrs (with Lithium "AA")
FCC Acceptance	Part 15 (No License Required)	Part 15 (No License Required)	Part 15 (No License Required)	Part 15 (No License Required)

RoHS2 Compliance
Clear-Com fully supports the efforts of the European Union to control the use and disposal of hazardous materials and has implemented a comprehensive program which ensures that all our products are compliant with the RoHS legislation.

Clear-Com®
AN HME COMPANY

About Clear-Com®

Clear-Com, an HME company, is a trusted global provider of professional real-time communications solutions and services since 1968. We innovate market proven technologies that link people together through wired and wireless systems.

Clear-Com was first to market portable wired and wireless intercom systems for live performances. Since then, our history of technological advancements and innovations has delivered significant improvements to the way people collaborate in professional settings where real-time communication matters. For the markets we serve – broadcast, live performance, live events, sports, military, aerospace and government, our communication products have consistently met the demands for high quality audio, reliability, scalability and low latency, as well as addressed communication requirements of varying size and complexity. Our reputation in the industry is not only based on our product achievements, but also on our consistent level of customer engagement as well as continuous dedication in delivering the right solution for specialized applications and the expertise to make it work. Around the globe and across markets, Clear-Com innovations and solutions have received numerous awards and recognitions for our ingenuity and impact to customers.

Americas and Asia-Pacific Headquarters
California, United States
Tel: +1.510.337.6600
Email: SalesSupportUS@clearcom.com

Europe, Middle East, and Africa Headquarters
Cambridge, United Kingdom
Tel: +44 1223 815000
Email: SalesSupportEMEA@clearcom.com

China Representative Office
Beijing, P.R.China
Sales/Marketing Tel: +86 10 59002608
Service Tel: +86 10 59000198

www.clearcom.com

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